

PAPERS READ.

REVISION OF THE GENUS *HETERONYX*, WITH
DESCRIPTIONS OF NEW SPECIES.

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PART I.

The monographs of the genera *Diphucephala* and *Liparetrus* by the Hon. W. Macleay, published in the Proceedings of the Linnean Society of N.S.W. in 1886, are probably in the hands of every student of Australian *Lamellicornes* as valuable books of reference. I hoped that Mr. Macleay would continue the work of monographing the *Melolonthide* of Australia, and have urged him to do so. But he tells me that he has other entomological work of a more pressing nature at present, and that it is not at all likely he will ever return to the work in question. As he was good enough to offer, if I would take up the task, to facilitate my efforts as far as possible by the loan of types from his collection, I have thought well to enter upon it, and have decided to commence with the genus that is the most formidable in respect of numbers,—viz., *Heteronyx*.

For this work I have at my disposal,—besides my own collection and a large portion of the Macleay collection, those of the Adelaide Public Museum, of the Adelaide University Museum, and of several private collectors, including a very interesting case of specimens obtained some years ago in the Northern Territory by Mr. J. P. Tepper.

It will be necessary to preface my revision of the species of *Heteronyx* by some remarks of a general nature,—first concerning

the limits of the genus,—and then concerning the characters that appear to me most reliable for distinguishing and sub-dividing the numerous species that are attributable to it.

As originally characterized by M. Guérin-Méneville, the genus was accommodated to the reception of the single species known to that author, but the discovery of additional species soon made it clear that there are many insects evidently congeneric with *H. Australis*, for which a place must be found in *Heteronyx*, by the removal from the category of “generic characters” of some characters that had been so regarded. M. Lacordaire (Gen. Col. III. 231), consequently re-characterized the genus, but in a manner that will not stand as absolutely satisfactory when a large collection of types is examined, for a rigid adherence to his diagnosis of the anterior tibiæ would exclude species that (so far at least as my observation goes), present no other distinctive character either structural or superficial, while a similar application of his diagnosis of the claws of the tarsi would admit species differing in other important respects from the typical form.

Among the genera found in Australia then, possessing the characters that would place them (in M. Lacordaire’s system) in the “groupe *Heteronyxides*,”—it appears to me that *Heteronyx* should contain only the species presenting the following characters:—“elytra not abnormally short (as in *Liparetrus*), antennæ of eight or nine joints, claws not simple,” and I have not seen any possessing these characters that I should be disposed to exclude; I regard the last-mentioned of these characters as the most essential one.

The following names are, or have been regarded as, more or less synonymic with *Heteronyx*.

Silopa, Er. (Wieg. Arch. 1842, I. p. 161). This genus was characterized probably on *Heteronyx Australis*, Guér.,—certainly on a true *Heteronyx*,—and is an absolute synonym.

Omaloplia, Steph. This is a non-Australian genus to which an Australian species (of *Caulobius* probably) was erroneously referred by MM. Hombron and Jacquinot.

Philochlœnia. The authors just named applied this name to another Australian species (also appertaining probably to *Caulobius*), and it has since been adopted by M. Blanchard for an American genus.

Sericesthis was a name applied by Dr. Boisduval (Voy. de l'Astrolabe),—but without any generic definition,—to insects of several genera, among which I doubt there having been a true *Heteronyx*; and probably M. Lacordaire considered it to include part of *Heteronyx* only through a confusion between that genus and *Caulobius*.

Caulobius, Le Guillou (Rev. Zool. 1844). I have not seen the original diagnosis of this genus, but the insect for which it was proposed is stated by M. Lacordaire to be identical with *Silopa pubescens*, Er., which again M. Lacordaire asserts to have perfectly simple claws; in that case I think it should be excluded from *Heteronyx*. If M. Lacordaire's assertion regarding *S. pubescens*, Er., is correct, it is clear that Erichsen attributed his *pubescens* to *Silopa* (which he characterizes as possessing bifid claws) in error, and then Le Guillou's name must be accepted for it. M. Lacordaire considers *Caulobius* a synonym of *Heteronyx*, while Dr. Burmeister places it not even in the same group of genera. I have several species before me which I believe to be congeneric with *Caulobius villosus*, Le G., and am of opinion that Dr. Burmeister is right. At all events the name *Caulobius* must not be treated as congeneric with *Heteronyx*, as there is no doubt of the simplicity of the claws in the species attributed to it.

Haploopsis, Blanch., is a synonym of *Heteronyx*, according to M. Lacordaire, but it has simple claws, and presents other differences; I regard it as a good genus.

Hostilina is distinguished from *Heteronyx* by M. Blanchard, on the shape of its labium; and the genus is doubtfully accepted by M. Lacordaire. I find the labium so extremely subject to variety in *Heteronyx*, that I have no hesitation in rejecting the name, although I have not seen the original species, which M. Lacordaire characterizes as having all the appearance of a *Heteronyx*.

Eurychelus was established by M. Blanchard as distinct from *Heteronyx* on account of the unusual length of the second joint of the maxillary palpi. I have very ordinary looking species of *Heteronyx* in which this joint is quite as long as it should be in *Eurychelus*, but as the species (*E. marmoratus*, Blanch.), appears to differ in facies from *Heteronyx*, it would not be wise to reject the name without having seen the type.

Nepytis, Er., resembles *Heteronyx* in having the claws not simple, but differs in having 7-jointed antennæ. This latter character I cannot regard as absolutely conclusive of generic distinction, but as it seems to be accompanied by an increased length of elytra, the genus may very probably be a good one.

It will thus be seen that in the group of Australian genera which would fall into the *Heteronyx* of Lacordaire, I regard *Heteronyx* as distinguished by the structure of its claws from all except *Eurychelus* and *Nepytis*, from the former of which I can specify no certain distinction (though it is probable such distinctions exist), while from the latter it differs in its antennæ consisting of more than seven joints.

To the genus *Heteronyx* thus defined a very large number of Australian species appertain, and it would doubtless tend to simplify the task of their identification and classification if they could be divided into groups in any degree natural by any tangible structural character. But such subdivision, I am of opinion, is impossible, although the structural differences among the species are so great as to make the subdivision into purely artificial groups exceptionally easy. If the attempt be made to form subgenera on the relation of the clypeus to the labrum, or on the number of joints in the antennæ, or on the proportions of the hind coxæ, or the shape of the femora or tibiæ, or on the form of the labium, it will be found that the nearest allies of any given species in one sub-genus are in an entirely different sub-genus. Hence, I think *Heteronyx* should be treated as an assemblage of insects forming altogether a very natural and distinct group, but with little fixity of structure in any individual organ.

As regards the sculpture of the species, the entire absence of geminate striation on the elytra, almost universally present in the allied genera, is very noticeable, and the decided tendency of the prothorax to take the form of being lobed behind is common to all, or nearly all, the species that I have seen.

A few remarks will be necessary on the characters that I rely upon for the distinction of species.

The character best fitted for the formation of primary groups is to be found, I think, in the shape of the labrum and clypeus and the relation of the one to the other. The upper border of the labrum shows, in most species, a tendency to be dilated in an upward direction, but in very varying degrees. In some species this dilatation is very slight, and the labrum is entirely below the level of the upper surface of the clypeus (as in most of the allied genera), but in others it is so strong that the upper surface of the labrum rises to, or above, the level of the upper surface of the clypeus, from the front of which it appears to project upwards, in which case the anterior margin of the clypeus is usually emarginate for its accommodation, and the reflexed margin of the same is interrupted in the middle. I propose then to divide the genus into two main groups, the first containing those species in which the clypeus is free from the labrum, the other those in which the labrum rises to or above the level of the clypeus. Nevertheless, a few species in which the relation of the labrum and clypeus is exceptional,—being either (a) as in the first group but with the labrum exposed by profound emargination of the clypeus, or (b) with the relation evidently connecting the species with the second group, but the labrum not quite sufficiently erected to place it accurately there,—I have thought it most intelligible to isolate as a group of intermediate forms, by which means the two main groups are fairly homogeneous in respect of this particular character.

An inspection of the ventral segments will show that (invariably, as far as I have seen) one or two transverse lines of hairs or bristles is to be found on each of them, which I have called the

“ventral series.” These are usually soft hairs, but in a few species they are very strong stout bristles; and as they are in some species confined to the sides of, and in others run all across, the segments, they furnish a valuable key to the distinction of species.

The lateral edges of the prothorax and elytra* are in all cases (so far as I have observed) fringed with a row of bristles or stout hairs, very different from the pilosity that clothes the upper surface in many of the genus. This I call the “lateral fringe.” It will be observed in most species to be entirely wanting on the apical margin, but in some it is continued there, and when that is the case it is ordinarily doubled or trebled (*i.e.*, there are two or three rows one behind another), and the individual hairs or bristles are stouter than those on the sides.

The hind femora vary greatly in shape. In some species the outline immediately before the inner apical angle is strongly and angularly produced (forming a kind of tooth), which in other species is enfeebled almost to the degree of total disappearance.

The claws are, in all cases I think, appendiculate rather than bifid in the strict sense, but as there is a considerable variation in the appendiculation and the term “bifid” has been used in many existing descriptions, I shall continue to use this latter term for those claws in which the inner apex of the basal portion (immediately in front of the appendiculation) is produced in a well-defined manner and in a direction more or less at a right angle to the longitudinal outline of the claw; and shall speak of this produced piece as the “lower,” and the portion of the claw beyond it as the “upper” lobe.

The other characters referred to in my descriptions do not, I think, require preliminary explanation.

The sexual distinctions are not very noticeable, and do not appear to be readily available for distinguishing species. In the

*On the elytra these fringes are inserted in the epipleural portion, which in this genus is scarcely at all turned under except at the extreme base.

males of those species with appendiculate claws, the basal portion of the anterior claws is usually stouter than in the females, and the hind-body of the females throughout the genus is longitudinally (*i.e.*, as viewed from the side) considerably more convex than that of the males.

The present memoir contains descriptions of all the previously undescribed Australian species known to me, of the first main group (or "section"), of the 2nd (or "intermediate section"), and of that portion of the 3rd in which the antennæ are 8-jointed and the claws bifid. I prefix tabulations to aid the study of the descriptions that follow, and have included in them the names of all the previously described species of which I have types before me.

The following species I have not been able to identify, nor are their descriptions sufficiently detailed to allow of my placing them in the tabulation without actual inspection of specimens. They all belong to the group treated of in this present memoir:—

H. laticeps, Burm. Exact habitat not known; probably it is allied to *H. corpulentus*, Macl., but distinguished by its pale colour and by the truncate apex of the elytra,—the outer extremity of truncation being sharply angled.

H. planatus, Burm., from S. Australia. It is said to be remarkable (as its name implies) for its flattened form.

H. præcox, Er., from Tasmania. Probably near my *H. æqualis* but distinguished *inter alia* by the prothorax being feebly channelled.

H. tempestivus, Er., from Tasmania. Probably near my *H. testaceus*, but with the clypeus evenly rounded in front.

H. pilosellus, Blanch., from N.S.W. Not sufficiently characterized, no definite distinction from *H. piceus*, Blanch., being pointed out.

H. piceo-niger, Macl., from N.W. Australia would probably come near *corpulentus* in my tabulation.

The following of Mr. Macleay's species I cannot be sure belong to this group, though in all probability it is their place; I do not know the number of joints in their antennæ. They appear to be distinct from all the species known to me:—

H. pallidulus and *ruficollis*, from Gayndah, and *H. parvulus* and *transversicollis* from N. W. Australia.

H. pubescens, Er., is not a true *Heteronyx*.

I do not know of any other described species that are likely to be members of this group. I purpose, when I have completed my revision of the genus, adding in an appendix copies of the descriptions of such of the species I have then failed to identify as have not already appeared in the Transactions of N. S. Wales Societies.

1ST SECTION.—CLYPEUS FREE FROM LABRUM; ITS REFLEXED
ANTERIOR MARGIN ENTIRE.

- A. Antennæ consisting of only 8 joints
- B. Ventral series consisting of stout
bristles (claws appendiculate)
- C. Surfaced furnished with conspicu-
ous granules, each granule bear-
ing a very long coarse seta..... *insignis*, Blackb.
- CC. Surface not clothed as "C"
- D. Prothorax rugosely and very
closely punctured..... *torvus*, Blackb.
- DD. Prothorax not as "D."
- E. Clypeal suture impressed
- F. Lateral fringes of elytra
strongly continued round
apex *tristis*, Blackb.
- FF. Lateral fringes not con-
tinued round apex.....**frontalis*, Blackb.

*The bristles in the ventral series are less stout than in the other species of this section, and render the place of this insect in the tabulation doubtful.

- EE. Clypeal suture not impressed *fortis*, Blackb.
- BB. Ventral series consisting of fine hairs
- C. Surface of clypeus continuous with that of the rest of head ; clypeal suture obsolete.....
- D. Clypeus scarcely emarginate in front *fulvohirtus*, Blackb.
- DD. Clypeus strongly emarginate in front (claws strongly bifid) *badius*, Macl.
- CC. Surface of clypeus on a different plane from that of the rest of head ; clypeal suture well-defined
- D. Hind corners of prothorax explanate ; upper tooth of anterior tibiæ almost obsolete (claws strongly bifid).... *rufopiceus*, Macl.
- DD. Hind corners of prothorax not explanate
- E. Anterior tibiæ bidentate..... *brevicollis*, Blackb.
- EE. Anterior tibiæ tridentate....
- F. Hind angles of prothorax sharp and pointed backwards *Tepperi*, Blackb.
- FF. Hind angles of prothorax rounded off..... *spretus*, Blackb.
- AA. Antennæ consisting of 9 joints
- B. Prothorax moderately (or not so strongly as in "BB") lobed behind
- C. Claws—at any rate the anterior—appendiculate (the appendiculate portion more than half as long as the basal).....
- D. Lateral fringe of elytra not continued round the apex.....

- E. Clypeus not emarginate.....
- F. Sculpture of upper surface close, fine, and uniform *piceus*, Blanch.
- FF. Sculpture of upper surface coarse and sparse *Froggatti*, Macl.
- EE. Clypeus emarginate..... *occidentalis*, Blackb.
- DD. Lateral fringes of elytra continued and increased round the apex *horridus*, Blackb.
- CC. Claws bifid ; or, if appendiculate, the appendiculate portion short
- D. Lateral fringe of elytra (as distinguished from general pilosity of surface) not continuous round apex
- E. Hind coxæ considerably shorter than metasternum on external margin
- F. Claws at most *moderately* bifid
- G. Clypeus distinctly emarginate in front.....
- H. Surface very coarsely punctulate
- K. Pygidium normal.....
- L. Hind coxæ very little shorter than metasternum *solidus*, Blackb.
- LL. Hind coxæ much shorter than metasternum.....
- M. Prothorax much more than half again as wide as long..... *Beltanae*, Blackb.
- MM. Prothorax scarcely more than half again as wide as long *satelles*, Blackb.

- KK. Pygidium strongly carinate *Darlingensis*, Blackb.
- HH. Surface very finely punctulate *testaceus*, Blackb.
- GG. Clypeus not emarginate in front..... ..
- H. Prothorax closely punctulate *gracilipes*, Blackb.
- HH. Prothorax very sparingly punctulate..... *victoris*, Blackb.
- FF. Claws very strongly bifid, upper lobe scarcely longer than lower... ..
- G. Surface of elytra normal.... .. *breviceps*, Blackb.
- GG. Surface of elytra with long hairs rising from slight elevations..... ..
- H. Free outline of clypeus forming a regular curve..... *rugosipennis*, Macl.
- HH. Free outline of clypeus flattened and sinuous in front..... .. *corpulentus*, Macl.
- EE. Hind coxæ scarcely if at all shorter than metasternum on external margin...,.....
- F. Front and hind margins of hind coxæ strongly converging inward *equalis*, Blackb.
- FF. Front and hind margins of hind coxæ but little convergent inward *holosericeus*, Macl.
- DD. Lateral fringe of elytra continued and increased round apex *variegatus*, Blackb.
- BB. Prothorax so lobed as to be about half as long behind, as in front of, a line joining the hind angles ... *lobatus*, Blackb.

H. INSIGNIS, sp.nov.

Sat elongatus ; postice leviter dilatatus ; minus nitidus ; ferrugineus, albido-pruinosis ; crebre subtiliter punctulatus ; pilis brevibus adpressis vestitus ; prothorace elytris et abdominis segmentis 2-5 (his ad latera transversim lineatim positis) granulatis, granulis setis longis rufis instructis. [Long. 6, lat. 3 lines (vix).

The pruinosity in some lights make the surface appear of a bluish-white colour. The puncturation of the upper surface is almost uniform, being slightly at its coarsest on the clypeus, and at its finest on the prothorax. The clypeus has a well-defined even reflexed margin, and is nearly evenly rounded in front, very slightly truncate ; it forms an even surface with the rest of the head and its suture is feebly marked and slightly arched. The prothorax is slightly more than half again as wide as it is long down the middle ; it is widest close to the base, which is about half again as wide as the front margin ; the front is strongly emarginate, the anterior angles being acute ; the sides are divergent in a slight curve from the front almost to the base, where they form a roundly obtuse angle with the basal margin which is rather strongly lobed hindward in the middle. The elytra have no fringe at the apex, and are about three times as long (and at their widest part nearly half again as wide) as the prothorax. They and the prothorax are irregularly studded with large punctures, the front edge of which is raised in a granuliform manner and from which a very long, coarse, red seta protrudes (the longest of these setæ are more than half the length of the prothorax). On the underside there is a transverse line on the middle (longitudinally) of ventral segments 2-5 formed of strong bristles rising from granules, the bristles being more than half as long as the segment and very stout ; these rows of bristles commence at the lateral margin and run out to near the middle of the segment, but entirely fail on the central portion. The hind coxæ are very little shorter than the metasternum on its external margin, and almost entirely overlap the basal ventral segment. Hind femora much wider than the

intermediate, and wider than any segment of the hind body; about six long bristles on inner basal edge of hind tibia; basal part of external margin of hind femur with a fringe of strong cilia, their inner apex very little produced but distinctly angulated. The epipleural portion of the elytra is unusually wide, and not at all turned under except at the extreme base.

Port Lincoln; I have seen only a single specimen.

H. TRISTIS, sp.nov.

Sat elongatus, postice leviter dilatatus; sat nitidus; niger, antennis palpis pedibusque plus minus rufis; pilis brevibus adpressis vestitus; capite confertim rugulose, prothorace fortius nec crebre, elytris squamose crebrius, pygidio sparsim, punctulatis; subtus fortius nec crebre punctulatus; abdominis segmentis ut præcedentis setiferis. [Long. 6, lat. 3 lines.

The head and prothorax scarcely differ in shape and proportions from those of *H. insignis*, except that the clypeal suture is quite straight; the elytra are a little less dilated behind. The upper surface is devoid of erect hairs or setæ except the pygidium (which is clothed with fine long reddish hairs), and the lateral and apical margins of the elytra which are fringed with coarse red bristles springing from minute granules; the bristles in the fringes are much closer, but the row is not doubled round the apex. The puncturation on the underside becomes very faint down the middle of the ventral segments. The hind coxæ are shorter than the metasternum and scarcely overlap the basal ventral segment. The hind femora are wider than the intermediate, but scarcely wider than the segments of the hind body; there are a few reddish bristles on the inner basal edge of the hind tibiæ and a fringe of short hairs reaching from the base to beyond the middle of the external margin of the hind femora. The middle line of the pygidium is feebly sulcate in its apical half. The inner apical margin of the hind femora is moderately produced, its outline rounded rather than angulated.

Occurs in the Adelaide district.

H. FORTIS, sp.nov.

Minus elongatus; robustus; postice leviter dilatatus; minus nitidus; niger vel ferrugineus, antennis palpisque testaceis, pedibus plus minus piceis vel rufescentibus; capite crebre rugulose, prothorace leviter minus crebre, elytris rugulose sat fortiter, pygidio vix perspicue, punctulatis; clypeo antice leviter rotundato, margine reflexo medio gracili; prothorace fortiter transverso.

[Long. $4\frac{2}{3}$, lat. $2\frac{2}{3}$ lines.]

The clypeus is wide and short, not forming an even surface with the rest of the head, the somewhat angulated clypeal suture appearing to be obscurely elevated, the appearance being caused, however, almost entirely by the clypeus being on a plane slightly lower than that of the rest of the head; the front margin is strongly reflexed on the sides, but much feebler towards the middle. The prothorax is nearly twice as wide as its length down the middle, the base not quite half again as wide as the front, which is very gently and widely emarginate, with angles but little produced; the sides diverge strongly from the front to near the middle, and thence less strongly to the base (which is widely and rather strongly lobed in the middle), with which they appear (viewed from above) to form right or almost acute angles; but the true margin (viewed from the side) is seen to join the base in a curve. The puncturation is not fine nor close, but has a shallow, effaced appearance, and there is a fairly well marked dorsal channel. The transverse wrinkling of the elytra is quite distinct; each of these bears about nine scarcely traceable striæ, among which are several costæ feebly defined, rather wide, but very little elevated (in some examples quite obsolete); the presence of these gives at a first glance an impression of the elytra being obscurely geminate-striate, but on careful inspection it is seen that the costæ are not bordered by seriate punctures, and that the puncturation and wrinkling of the general surface is not interrupted by them. The lateral fringe is not continued round the apex of the elytra, which has a very narrow membranous border. The pygidium is carinate in its basal half, and

is punctured somewhat similarly to the prothorax. The underside is strongly punctured, moderately closely on the metasternum, very sparingly on the hind coxæ, and extremely closely on the ventral segments, in the middle of which the rows of bristles are obsolete and the puncturation less close. The hind coxæ are very little shorter than the metasternum, and the hind femora very little wider than the intermediate, their inner apical portion angulated and strongly produced.

An extremely aberrant species, with its nearest allies in the next of my "sections." Its *height* (*i.e.*, the distance that a pin run between its elytra would pass through its body) is greater than that of any other *Heteronyx* known to me. The elytra, too, are short, and the longitudinal ridges are quite exceptional.

Port Lincoln; also taken by Professor Tate at Fowler's Bay.

N.B.—I have seen some specimens from the eastern and south-eastern parts of S. Australia which are decidedly smaller ($3\frac{2}{3}$ lines) than my types of this insect, but do not appear to differ otherwise.

H. TORVUS, sp.nov.

Sat elongatus, postice leviter dilatatus; minus nitidus; niger, antennis palpisque rufis; pilis brevibus adpressis sparsim obscure vestitus; capite prothoraceque creberrime rugulose, pygidio subtilius sparsius leviter, elytris squamose minus crebre, punctulatis; his rugulose transversim rugatis, membrana rufa marginatis; subtus nitidior, fortius nec crebre punctulatis; abdominis segmentis ut præcedentis setiferis. [Long. 5-6, lat. $2\frac{1}{3}$ -3 lines.

Clypeus evenly but not strongly margined, and gently rounded in front (more strongly margined and less strongly rounded in the female than in the male), its surface continuing the plane of the forehead, and the clypeal suture scarcely traceable. The prothorax is nearly twice as wide as down the middle it is long, its base about half again as wide as its front margin which is moderately emarginate, with sharp angles; its sides diverge in a gentle curve from the front to the base; the basal angles are roundly obtuse,

the base bisinuate, the lobe in the middle moderately strong. The head and prothorax are very closely, rugosely, and evenly punctured. The puncturation of the elytra resembles that of the prothorax, but is considerably less close and is modified by a system of rather coarse wavy transverse wrinkles; there are faint indications of about nine striæ, between some of which the interstices are not quite flat. There are no setæ or hairs on the upper surface, except the lateral fringe which is not continued to the apex of the elytra. The metasternum, hind coxæ and hind body are scarcely different from the same parts in *H. fortis*. The hind femora are markedly wider than the intermediate and have the inner apical angle or tooth very well developed, and their external edge strongly fringed almost to the apex; the hind tibiæ are fringed with strong bristles on their inner side, several being placed close together at the base.

Adelaide district; also near Sedan.

H. FRONTALIS, sp.nov.

Lator; postice leviter dilatatus; sat nitidus; ferrugineus; clypeo confertim rugulose, capite postice subtilius minus crebre, prothorace fortius minus crebre, elytris fortiter minus crebre, pygidio sparsius subtilius, punctulatis; elytris post medium membrana testacea marginatis; abdomine ut *H. insignis* setifero.

[Long. $5\frac{1}{4}$, lat. $2\frac{3}{4}$ lines.

The clypeus is exceptionally short and wide (being nearly four times as wide as long); it is evenly margined, and widely rounded in front; it does not form with the rest of the head a continuous plain surface; the clypeal suture is distinctly impressed and almost straight. The prothorax is a little more than half again as wide as its length down the middle and about half again as wide at the base as across the front, which is rather strongly emarginate with sharp angles; its sides diverge in a gentle curve from the apex to the base; viewed from above they seem to form with its base on either side a sharp right angle, but if the margin be viewed accurately from the side it is seen to curve into the base without

any angle at all. The puncturation of the clypeus is fine, close, and rugose, that of the rest of the head smooth and a little less close and less fine; the puncturation of the prothorax is still stronger and less close (but still neither sparse nor coarse), that of the elytra about as close as on the prothorax and decidedly coarser. The elytra are very little wrinkled transversely, and (except a faint trace behind of a sutural stria) have no trace of striæ. The pygidium is channelled longitudinally in its apical half. The underside and legs closely resemble those of *H. torvus*, but differ in the puncturation of the hind body being more enfeebled down the middle portion, and the hind femora being almost impunctate on the inner portion of their surface, and having the inner apical angle much less defined. The ventral series consist of stout hairs rather than bristles.

Northern Territory of S. Australia.

H. FULVO-HIRTUS, sp.nov.

Sat elongatus, postice vix dilatatus; sat nitidus; brunneus, antennis palpisque testaceis; pilis fulvis brevibus (retrorsum directis) sat dense vestitus, elytris etiam capillis sat longioribus erectis (haud retrorsum directis) sparsius instructis; capite crebre rugulose, prothorace sparsius crassissime, elytris crasse squamose, pygidio sparsius sat fortiter, punctulatis; elytris membrana fulva anguste marginatis; abdominis segmentis 2-5 ad latera capillis (erectis gracilibus sublineatim transversim positis) instructis.

[Long. 4-5, lat. 2-2½ lines.

The clypeus is widely and gently emarginate in front, with its reflexed margin (though continuous) much attenuated above the labrum; it forms a continuous surface with the rest of the head, and the clypeal suture is barely traceable; the puncturation is close, rough, and fine in the front of the clypeus, becoming gradually less so hindward to the back of the head. The prothorax is nearly twice as wide as its length down the middle, and at the base rather more than half again as wide as across the front, which is very deeply emarginate with sharp strongly produced

angles ; its sides diverge in a gentle curve to about the middle, and thence are nearly straight to the base ; the basal angles are roundly obtuse, the base rather decidedly and narrowly lobed in the middle, but scarcely sinuate on either side of the lobe ; the surface is sparingly sprinkled with very large coarse punctures, and bears a fringe of long erect hairs in front. The puncturation of the elytra is almost as coarse and sparse as that of the prothorax, but has a squamose appearance, and is much run together transversely by vague coarse wrinkles ; there is no indication whatever of striæ (in the example before me). The pygidium has faint traces of a keel in front, and has an obscure longitudinal fovea in front of the apex. The puncturation of the metasternum, hind coxæ, and hind body is almost as in *H. torvus*, except that the last-named part is nearly lævigata in the middle. The hind coxæ are considerably shorter than the metasternum, and scarcely overlap the basal ventral segment. The hind femora are considerably wider than the intermediate, with their inner apical angle strongly produced in a tooth, and their external edge clothed with long soft hairs nearly to its apex ; the hind tibiæ have fine bristles or hairs on their inner side, several being crowded together close to the base. Claws bifid.

Taken near Sedan by Mr. Rothe.

H. BREVICOLLIS, sp.nov.

Minus elongatus, postice leviter dilatatus ; sat nitidus ; ferrugineus ; capite prothoraceque sat æqualiter crasse minus crebre, elytris fortius subseriatim nec crebre, pygidio crasse crebrius, punctulatis ; clypeo antice subtruncato, margine reflexo medio angulatim elevato ; prothorace fortiter transverso.

[Long. 3, lat. $1\frac{2}{3}$ lines.

The clypeus is unusually elongate, the distance from its front to the clypeal suture (which is well-impressed and angulate) being scarcely less than from the latter to the back of the head ; it is sub-truncate in front, with a strong reflexed margin which becomes wider in the middle in such fashion that its dilatation appears as a

feeble erect tooth ; it does not form with the rest of the head a continuous plane. The prothorax is fully twice as wide as it is long down the middle, the base about a third again as wide as the front, which is evidently bisinuate with its angles very little produced ; the sides are gently rounded, the hind angles obtuse (somewhat roundly), the base bisinuate, and hardly lobed in the middle. The transverse wrinkling of the elytra is almost non-existent ; these have no distinct striation and their lateral fringe is not continued round the apex (the specimen before me, however, is evidently abraded), there is a fairly well-defined apical membranous border. The pygidium in a fresh specimen is probably clothed with rather long erect hairs. The underside is nitid, strongly and rather closely punctured, the puncturation as also the rows of hairs obsolete in the middle of the ventral segments. The hind coxæ are very much shorter than the metasternum, the hind femora much wider than the intermediate, with their inner apical portion scarcely prominent. Claws appendiculate.

N. S. Wales ; in the collection of the Hon. W. Macleay.

H. TEPPERI, sp.nov.

Sat elongatus, postice vix dilatatus ; sat nitidus ; niger, antennis palpisque rufis ; capite crebre rugulose, prothorace sparsius sat fortiter, elytris fortiter subsquamose, punctulatis ; his apicem versus membrana testacea marginatis ; pygidio opaco sparsim granulato ; abdomine ut *H. fulvo-hirti* hirsuto.

[Long. $4\frac{1}{2}$, lat. $2\frac{1}{4}$ lines.

The clypeus is evenly margined and strongly rounded in front, and forms a continuous surface with the rest of the head, interrupted however by the slightly arched and strongly keeled clypeal suture ; the head is punctured as that of *H. fulvo-hirtus*. The prothorax is quite twice as wide as its length down the middle, and at the base rather more than half again as wide as across the front which is moderately emarginate with sharp angles ; its sides diverge in a gentle curve to about the middle and thence are nearly straight to the base with which they form on either side a right

angle whose extreme apex is scarcely rounded off and which is a little directed backward; the base is bisinuate with the middle lobe very wide but rather strongly produced backward; the surface is rather sparingly and strongly punctured, but the punctures are not large. The punctures on the elytra are much larger and closer than those of the prothorax and are not much run together by transverse wrinkles; there is a rather distinct sutural stria, and several more are faintly indicated. The underside and legs scarcely differ from those of *H. fulvo-hirtus*, except in the puncturation of the middle part of the hind body being less sparse. The upper surface is almost devoid of pubescence in the example before me, but probably in a perfectly fresh specimen each puncture bears a very short adpressed seta. Claws bifid.

A single specimen in the S. Australian Museum; exact habitat not known.

H. SPRETUS, sp.nov.

Sat elongatus; postice vix dilatatus; sat nitidus; ferrugineus; capite antice crebre rugulose postice sat sparsim, prothorace sparsius minus fortiter, elytris crasse nec profunde nec crebre, pygidio subtilius sat crebre, punctulatis; elytris postice membrana angusta marginatis; abdomine ut *H. fulvo-hirti* hirsuto.

[Long. 4, lat. 2 lines.

Very like *H. Tepperi*, differing in colour and size, and in the following particulars:—the clypeus is much less strongly rounded in front being almost subtruncate; the keel forming the clypeal suture is strongly angulated in the middle; the clypeus is on a plane slightly below the surface of the rest of the head, which is less closely punctured; the puncturation of the prothorax is a little less strong, and its hind angles are rounded off (as in *H. fulvo-hirtus*); the pygidium is like that of *H. fulvo-hirtus* (but somewhat narrower), and the ventral segments are almost impunctate in the middle. Claws appendiculate.

Sedan; taken by Mr. Rothe.

H. PICEUS, Blanch.

H. piceus, Blanch., Cat. Coll. Ent., 1850, p. 110.

Lator, postice leviter dilatatus; minus nitidus; ferrugineus vel brunneus, antennis palisque testaceis; pilis brevibus adpressis sat dense vestitus; supra crebre subtilius sat æqualiter (pygidio minus crebre excepto) punctulatus; elytris ad apicem membrana angusta marginatis; abdominis segmentis 2-5 ad latera capillis erectis (lineatim transversim positis) instructis.

[Long. 5-6½, lat. 2¾-3¾ lines.

The head scarcely differs from that of *H. frontalis*, except in having the puncturation closer behind, and the clypeal suture slightly angular in the middle. The prothorax is nearly twice as wide as its length down the middle, and its base is nearly twice as wide as its front, which is deeply emarginate with sharp angles; its sides are very gently rounded, and form a roundly obtuse angle on either side with the base, which is feebly bisinuate, the middle lobe very wide and inconspicuous. The elytra have scarcely any indication of transverse wrinkling but have more or less faint indication (most evident in the female, hardly discernible in the male) of striation. The puncturation of the upper surface is very fine and close (though decidedly less so than in *H. insignis*), and is very evenly distributed, except that it is at its closest on the clypeus, and is much more sparing on the pygidium than elsewhere. Apart from colour the underside and legs scarcely differ from those of *H. torvus*, except in having hairs rather than bristles forming the lateral series of the hind body, and the inner apical angle of the hind femora obsolete. The lateral fringe of the elytra is not continued on the apical portion.

I have very little doubt of the correctness of my identification; M. Blanchard's descriptions of *H. piceus* and *pilosellus* do not specify any definite distinction between the two, but probably (judging by its name) *pilosellus* is furnished with longer and more conspicuous pilosity.

The insect is probably more widely distributed than most of its congeners; I have specimens before me from S. Australia and N. S. Wales.

H. HORRIDUS, sp.nov.

Lator, postice vix dilatatus; minus nitidus; piceo-niger, obscure pubescens; supra crebre subtilius sat æqualiter (pygidio crassius sparsim excepto) punctulatus; elytris apice setis crassissimis dense instructis; abdominis segmentis 2-5 ad latera capillis erectis (lineatim transversim positis) instructis. [Long. 5, lat. $2\frac{3}{8}$ lines.

This insect is very close to *H. piceus*, from which it scarcely differs except in the following respects:—the clypeus is a little longer and consequently more strongly rounded in front with the middle of its anterior margin very slightly sinuate in an upward direction; there is a little more indication of transverse wrinkling on the elytra, and the bristles in their lateral fringe are much coarser and instead of ceasing where the lateral margin turns inward towards the apex they become closer and coarser, forming a dense fringe two or three deep pointed backwards along the apex; on the underside the puncturation of the ventral segments is evidently fainter, more sparse in the middle. The example before me is less decidedly pubescent, but may possibly be abraded.

Also resembles *H. tristis*, differing in its smaller size, in the nature of the ventral series, in the anteriorly much more strongly rounded clypeus, &c., &c.

H. SOLIDUS, sp.nov.

Minus elongatus; postice leviter dilatatus; nitidus; rufo-ferrugineus, antennis palpisque testaceis; clypeo profunde sat crebre, vertice sparsius, prothorace duplo (subtiliter et crassissime) sparsim, elytris crasse squamose, pygidio sparsim minus fortiter, punctulatis. [Long. 5, lat. $2\frac{1}{2}$ lines (vix (.

The clypeus is evenly margined and scarcely emarginate in front; the clypeal suture is strongly impressed and somewhat bisinuate, the plane of the suture not continuous with that of the

rest of the head. The prothorax is less than half again as wide as its length down the middle, the base about twice as wide as the front, which is strongly emarginate with sharp angles; the sides diverge somewhat arcuately from the front to the base, with which they seem, viewed from above, to form nearly right angles (the true marginal angles being seen from the side to be rounded off); the base is scarcely bisinuate, and is widely and moderately produced backward in the middle. The transverse wrinkling of the elytra is strong and coarse, their lateral fringe not continued round the apex, which has a scarcely defined membranous border. On the underside the puncturation is strong and close on the metasternum and hind coxæ, not close (especially in the middle) but rather strong on the ventral segments, the hairs in the ventral rows rather fine and more or less continuous all across. The hind coxæ are not much shorter than the metasternum, the hind femora are decidedly wider than the intermediate, with their inner apex rounded and only very widely and feebly prominent. The specimen before me is evidently abraded, but its upper surface bears a few long hairs, which are probably much more numerous in a fresh specimen.

S. Australia; in the collection of the Hon. W. Macleay.

H. BELTANÆ, sp.nov.

Minus elongatus; postice haud dilatatus; sat nitidus; ferrugineus; pilis suberectis fulvis vestitus; supra (clypeo crebrius ruguloso excepto) crasse sat sparsim punctulatus; elytris sat fortiter transversim rugatis; abdominis segmentis capillis erectis longis vestitis.

[Long. $3\frac{1}{2}$, lat. $1\frac{1}{2}$ lines.

The clypeus is evenly margined in front, with its anterior border gently and roundly emarginate, its surface continuous with the rest of the head; the clypeal suture very fine and obscure. The prothorax is almost twice as wide as long down the middle, and the base is about half again as wide as the front, which is slightly emarginate, with angles very little produced;

the sides are rather strongly rounded; the hind angles viewed from above appear almost rounded off; the base is almost evenly rounded from angle to angle, so that there is little indication of a basal lobe. The elytra bear (in addition to the transverse rugæ) a number of obscure longitudinal wrinkles (especially one near the suture), which give them a slight appearance in some lights of being striate; they are punctured only a little more closely than the prothorax, but the presence of the numerous wrinkles makes their whole sculpture look *considerably* closer. The metasternum and hind coxæ are sparingly (especially near the middle) and strongly punctured, the latter considerably shorter than the former, and having their hind external angle very much rounded off. The ventral segments are punctured rather sparingly and strongly at the sides—more obscurely in the middle; the ventral series consist of very fine soft hairs, and are much confused with other hairs and hardly conspicuous. The hind femora are moderately wider than the intermediate, their inner apical angle well defined, their under surface (*i.e.*, that which is visible when the insect is laid on its back) impunctate or nearly so (the usual *rows* of punctures of course are present).

I have met with a few specimens near Beltana, in the interior of S Australia.

H. BREVICEPS, sp.nov.

Minus elongatus; postice leviter dilatatus; sat nitidus; nigropiceus, antennarum clava pallida; clypeo confertim rugulose, vertice sparsius, prothorace valde sparsim, subtilius punctulatis; elytris pygidioque fortiter nec crebre punctulatis.

[Long. $4\frac{1}{4}$, lat. $2\frac{1}{4}$ lines.

The specimen before me being a very old one it is likely that the colours of a fresh example might be brighter. The head is very short and wide, the clypeus evenly margined and slightly emarginate in an upward direction in front; the clypeal suture is strongly impressed and angular, the plane of the clypeus not quite continuous with that of the rest of the head, the surface of the same closely, rugosely and rather finely punctured, that behind the

suture being more sparsely punctured and not rugose. The prothorax is rather more than half again as wide as its length down the middle, the base about half again as wide as the front, which is very widely and somewhat deeply emarginate with sharp angles; the sides diverge arcuately in front and are nearly straight behind, appearing from above to form nearly right angles (the true marginal angles being seen from the side to be quite rounded off) with the base, which is scarcely bisinuate, and is widely and moderately produced backward in the middle; the surface is very sparsely and quite finely punctulate. The transverse wrinkling of the elytra is very slight and obscure, their puncturation decidedly strong, not close, and scarcely at all squamose; their lateral fringe is not continued round the apex which has an obscure and very narrow membranous border. The pygidium is extremely nitid, and has a shallow depression near its apex. The underside is very strongly and not closely punctured, the hairs in the ventral rows rather stout, and more or less continuous across the middle, the hind coxæ much shorter than the metasternum, and the hind femora not much wider than the intermediate, with their inner apex rounded and not prominent.

N. Territory of S. Australia; taken by Prof. Tate.

H. RUGOSIPENNIS, MacL.

Through the courtesy of F. M. Bailey, Esq., F.L.S. (Colonial Botanist of Queensland), I have before me specimens taken near Brisbane, which appear without doubt to appertain to this species. From its place in the foregoing tabulation various particulars regarding it are indicated which Mr. Macleay did not mention in his original description (Trans. Ent. Soc. N.S.W. II, p. 196).

H. ÆQUALIS, sp. nov.

Sat elongatus, postice leviter dilatatus; sat nitidus; testaceo ferrugineus; supra pilis suberectis sat brevibus sat dense vestitus; capite crasse squamose minus confertim, prothorace subtilius sparsius, elytris crebrius fortius (nec etiam fortiter), pygidio

sparsim subtilius, punctulatis; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis.

[Long. 4 (vix), lat. 2 lines (vix).

The head scarcely differs from that of *H. horridus*, except in its puncturation being coarse and less close, and is rather lightly impressed, with a squamose appearance. The prothorax is three-quarters again as wide as its length down the middle, and its base is about a third again as wide as its front margin, which is slightly bisinuate, with anterior angles only moderately advanced; its sides are moderately strongly rounded, and their junction with the base is quite rounded off, the latter being bisinuate, with its middle part scarcely produced backward like a lobe. The elytra are transversely wrinkled, and bear distinct indications of striation. On the underside the metasternum and hind coxæ are coarsely punctured (rather closely at the sides, sparingly in the middle); the hind body is much more finely and feebly punctured (but without the puncturation being much enfeebled in the middle); the ventral segments are furnished with transverse lines of fine hairs which are not obsolete in the middle. The hind coxæ are not very much shorter than the metasternum, the hind femora not much wider than the intermediate, and with the inner apical angle scarcely prominent.

Western Victoria; also near Adelaide.

H. VICTORIS, sp. nov.

Sat elongatus, postice vix dilatatus; sat nitidus; nigro-piceus, supra pilis brevibus minus dense vestitus; capite crasse dense rugulose, prothorace crasse sparsius, elytris densius sat fortiter, pygidio sparsius leviter, punctulatis; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis.

[Long. 4, lat. 2 lines.

The clypeus is gently rounded in front and evenly margined, its surface not forming a continuous plane with the rest of the head, the clypeal suture distinctly impressed and lightly arched, the puncturation of the whole head very even, close, coarse and rugose. The prothorax is rather more than a third again as wide

as long down the middle and its base is nearly twice as wide as its front margin which is gently emarginate with front angles but little advanced; its sides diverge from the apex in nearly straight lines to the middle and then are gently arched to the base with which they form an obtuse angle on either side; the base is strongly lobed backward in the middle. The transverse wrinkling of the elytra is well-marked and there is no trace of striæ. The underside and legs closely resemble those of *H. equalis*, but the inner apical angle of the hind femora is gently and obtusely prominent.

Victor Harbour.

H. GRACILIPES, sp.nov.

Sat elongatus; postice leviter dilatatus; sat nitidus; nigropiceus, antennis palpisque testaceis, tarsis rufescentibus; pilis brevibus adpressis albidis vestitus; supra fortius sat crebre punctulatus; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis. [Long. 4.5, lat. 2-2½ lines.

The puncturation of the whole upper surface from the apex of the clypeus to that of the elytra is quite uniform, moderately fine and close but not deeply impressed; the clypeus is evenly margined and rounded in front, its surface not quite in a continuous plane with that of the rest of the head, the clypeal suture moderately impressed and arched. The prothorax is two-thirds again as wide as long down the middle, and the base is about two-thirds again as wide as the front which is strongly emarginate with sharp prominent angles; the sides diverge to behind the middle in nearly straight lines, and thence are arched to the base with which viewed from above they seem to form a defined obtuse angle, but viewed from the side the true margin is seen to be quite rounded off with the base which is only lightly bisinuate though the middle is rather strongly produced backward in a lobe. The transverse wrinkling of the elytra is not very conspicuous; these have no (or almost no) trace of striæ; there is a very fine membranous border behind, and the lateral fringe is not continued round the apex. The pygidium is sparingly and very faintly punctured and is clothed

with long fine erect hairs. The metasternum in the middle is shining and coarsely punctured, at the sides less shining and more finely and closely punctured. The hind coxæ, and the ventral segments are punctured almost as the metasternum; the rows of hairs on the ventral segments are feeble but continuous all across. The hind coxæ are shorter than the metasternum, the hind femora very little wider than the intermediate, their inner apical angle obtuse and little prominent,—the hind tibiæ more slender than is usual in the genus.

S. Australia.

N.B.—A specimen from Kangaroo Island is of a more ferruginous tone than those from the neighbourhood of Adelaide, but does not differ otherwise.

H. SATELLES, sp.nov.

Sat elongatus; postice vix dilatatus; sat nitidus; nigro-piceus, antennis palpisque testaceis, clypeo prothoraceque ad latera, et pedibus, rufescentibus; pilis minus brevibus adpressis albidis vestitus; capite crebre rugulose, prothorace pygidioque sparsius profunde, elytris sparsius minus profunde (sat crasse tamen), punctulatis; clypeo emarginato, in medio tenuius marginato.

[Long. 3, lat. $1\frac{1}{2}$ lines.

The clypeus is broadly and gently emarginate in front (shaped to the labrum), and its reflexed margin is enfeebled in the middle (approximating this species to those of Section III); nevertheless the apex of the labrum does not rise to the level of the plane of the clypeus, and the reflexed margin of the clypeus is not *interrupted*. The surface of the whole head is very nearly a continuous plane and the slightly arched clypeal suture is very obscure. The prothorax is about half again as wide as its length down the middle, and the base is nearly half again as wide as the front, which is strongly emarginate, with sharp prominent angles; the sides diverge in a gentle curve almost to the base where they are rounded more strongly, joining the base (which is slightly bisinuate but rather strongly and narrowly produced backward in

the middle) almost with an even curve. The transverse wrinkling of the elytra is not at all conspicuous; these show scarcely any trace of striation, and their lateral fringe is not continued round the apex, which has a very narrow and obscure membranous border. The pygidium is sparsely clothed with long very fine erect hairs. The underside is nitid, sparsely (especially on the middle of the metasternum), and very strongly, punctured. The hairs in the rows on the ventral segments are very fine but long and continued all across. The hind coxæ are much shorter than the metasternum, the hind femora very little wider than the intermediate, their inner apical angle rounded and not prominent. Hind tibiæ slender.

A specimen evidently identical with this species, in the collection of the Hon. W. Macleay, is of a dark ferruginous colour.

This species is allied to the preceding.

S. Australia; also occurs in N. S. Wales.

H. DARLINGENSIS, sp.nov.

Sat elongatus, postice vix dilatatus; sat nitidus; piceo-ferrugineus, antennis palpisque testaceis; pilis brevibus adpressis albidis sparsim vestitus; capite crebre rugulose, prothorace sparsius fortiter, elytris sparsius minus profunde, pygidio (longitudinaliter carinato) crasse sat dense, punctulatis. [Long. 3, lat. $1\frac{1}{2}$ lines.

Closely allied to *H. satelles*, Blackb., the description of which will apply accurately to the present insect except in respect of the following particulars.

The reflexed margin of the clypeus is not stronger at the sides than in the middle; the sides of the prothorax are much more strongly rounded, and the base of the same is evidently more strongly lobed; the pygidium is more coarsely and closely punctured and has a strong keel down its middle, and the inner apical angle of the hind femora is more prominent.

Darling River; in the collection of the Hon. W. Macleay.

H. OCCIDENTALIS, sp. nov.

Minus elongatus; postice leviter dilatatus; minus nitidus; ferrugineus, pilis suberectis sat brevibus vestitus; capite crebre crasse, prothorace minus fortiter minus crebre, elytris fortiter squamose minus crebre, pygidio sparsim minus fortiter, punctulatis; hoc capillis longioribus erectis vestito.

[Long. 5, lat. $2\frac{1}{2}$ lines.

Clypeus strongly emarginate in the middle, its margin enfeebled (but not wanting) in the extreme centre; clypeal suture distinct and sub-angulate, surface of clypeus nearly continuous with that of rest of head. Prothorax two-thirds again as wide as its length down the middle, its width across front equal to its length, its front lightly emarginate, with angles but little produced; its sides diverge arcuately to behind middle and then curve round to base with which they form a decided obtuse angle, the base is gently bisinuate, and but little produced backward in the middle. The transverse wrinkling of the elytra is very slight, their lateral fringe not continued round the apex which has a very narrow membranous border preceded by a transverse depression simulating a wide membranous border. On the underside the metasternum is very sparsely and finely punctured, the hind coxæ much more closely and coarsely, the ventral segments moderately strongly and evenly but not closely; the hairs in the ventral rows are rather fine and are continuous all across. The hind coxæ are very little narrower than the metasternum, and are scarcely narrowed toward the middle line of the body. The hind femora are decidedly wider than the intermediate and have their inner apex evidently prominent though not angulated.

King George's Sound; in the collection of the Hon. W. Macleay

H. TESTACEUS, sp. nov.

Sat elongatus; postice vix dilatatus; sat nitidus; rufo-testaceus, supra pilis brevibus adpressis vestitus; capite prothoraceque sat fortiter minus dense, elytris pygidioque subtilius dense, punc-

tulatis; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis. [Long. $2\frac{1}{4}$ - $3\frac{1}{5}$, lat. $1\frac{1}{8}$ - $1\frac{1}{5}$ lines.

The clypeus is rather strongly emarginate (in an upward direction) in front, giving it the appearance somewhat of its contour being disturbed by the labrum, but on close inspection the labrum is seen to be altogether below it and its margin to be continuous and even; its surface continues the plane of the rest of the head, the clypeal suture being straight and rather distinctly impressed; its puncturation is slightly finer and closer than that of the rest of the head. The prothorax is two-thirds again as wide as its length down the middle and its base is about a third again as wide as its front margin, which is gently emarginate with angles very little produced; the sides are slightly but somewhat evenly rounded, the basal angles rounded off, the base nearly straight. The transverse wrinkling of the elytra is fine but distinct; these have no trace of striæ except a faint indication of that next the suture, and their lateral fringe is not continued to the apex. On the underside the metasternum and hind coxæ are evenly and strongly punctured, the hind body more sparingly and feebly (especially in the middle), where the hairs of the ventral series become very sparse and short. The hind coxæ are decidedly shorter than the metasternum, the hind femora not much wider than the intermediate, their inner apical angle being rounded and very little prominent.

In my collection; exact habitat not known, but probably it is Port Lincoln.

H. VARIEGATUS, sp. nov.

Sat elongatus, postice leviter dilatatus; sat nitidus, fortiter punctulatus; minus breviter pubescens, supra variegatus, capite piceo, prothorace rufo-brunneo, elytris testaceis, antice posticeque infuscatis: subtus antice piceus postice testaceus, antennis (clava picea excepta) palpis pedibusque testaceis; abdominis segmentis 2-5 capillis erectis (lineatim transversim positis) instructis.

[Long. $2\frac{1}{3}$, lat. $1\frac{1}{8}$ lines.

The clypeus is evenly margined and sub-truncate in front, its surface continuous with the rest of the head, the clypeal suture finely keeled and straight, the whole head very closely, strongly and rugosely punctured. The prothorax is about half again as wide as long down the middle, and its base is about a third again as wide as its front margin, which is slightly bisinuate, with angles but little advanced; its sides are gently arched and form on either side a roundly obtuse angle with the base which is bisinuate, its middle part only moderately produced backward; its surface is extremely coarsely and rugosely (but less closely than that of the head) punctured. The elytra are punctured even more coarsely (but a little less closely) than the prothorax; they are a good deal wrinkled transversely and have scarcely any trace of striation. The pygidium (which is testaceous in colour) is punctured strongly (but much less so than the elytra), and closely. The whole upper surface is rather densely clothed with semi-erect rather short pubescence (the lateral fringe of the elytra being carried strongly round the apex), and has a mottled appearance owing to some infuscation on the elytra round the scutellum and on the hinder part of the disc with some indication of infuscate spots on the prothorax. On the underside there is the same mottled appearance, almost every part (except the metasternum which is wholly piceous) being more or less testaceous clouded with infuscation; the metasternum and hind coxæ are coarsely punctured, the hind body rather coarsely but not deeply, the puncturation and rows of hairs (which are fine and long) being continued all across. The hind coxæ are opaque (in strong contrast to the rest of the surface), and have a whitish pruinose appearance; their hind margin is cut quite obliquely leaving a wide piece of the basal ventral segment visible at the side and almost concealing it towards the middle; the hind coxæ are quite as wide as the metasternum (which is strongly protuberant) on its middle line; the hind femora are considerably wider than the intermediate with their inner apical angle rounded off and scarcely at all prominent.

Western Australia; sent to me by E. Meyrick, Esq.

H. LOBATUS, sp.nov.

Sat elongatus; postice leviter dilatatus; sat nitidus; ferrugineus, antennis palpisque testaceis; pilis brevibus adpressis testaceis vestitus; capite rugulose crebre, prothorace (hoc postice fortiter producto) sat fortiter sat sparsim, elytris fortiter sat crebre, punctulatis. [Long. 4, lat. 2 lines.

The clypeus is evenly margined and slightly truncate in front, its surface not quite forming a continuous even plane with the rest of the head, its puncturation closer and not so coarse as that behind the impressed clypeal suture which is slightly arched and tolerably distinct. The prothorax is three-fifths again as wide as its length down the middle, and its base is nearly three-fifths again as wide as its front, which is widely but not very strongly emarginate with sharp moderately produced angles; its sides diverge with very slight curvature to the base with which they form a rounded angle; the base is scarcely bisinuate but extremely strongly produced backward in a middle lobe. The transverse wrinkling of the elytra is well-marked and there is no trace whatever of striation; the lateral fringe is not carried round the apex, and there is little indication of a membranous apical border. The pygidium is not punctulate but granulate, each granule bearing a fine erect hair. The underside (especially the metasternum) is strongly and rather closely punctured on the sides, more feebly and sparsely in the middle. The hairs in the rows on the ventral segments are long and fine and continue strongly across the middle. The hind coxæ are decidedly shorter than the metasternum, the hind femora moderately wider than the intermediate, their inner apex rounded and scarcely prominent. Claws dentate near apex.

Port Lincoln.

2ND SECTION.—(INTERMEDIATE).

- A. Antennæ 9-jointed. Clypeus deeply and triangularly excised in the middle, in consequence of which the labrum is much exposed.....

- B. Upper surface clothed with adpressed hairs, or scarcely pubescent.....
- C. Clypeus smooth and almost without punctures *laviceps*, Blackb.
- CC. Clypeus strongly and closely rugulose *simulator*, Blackb.
- BB. Upper surface clothed with erect hairs *pygidialis*, Blackb.
- AA. Antennæ 8-jointed. Clypeus as in 3rd Section, but its upturned apex not quite reaching the level of the clypeus *rubescens*, Blanch.

H. *LÆVICEPS*, sp.nov.

Minus elongatus; postice modice dilatatus, minus nitidus; niger; antennis palpisque testaceis; tarsis pygidiique apice piceo-ferrugineis; capite prothoraceque vix manifeste, elytris sparsius sat fortiter, pygidio crebrius sat fortiter, punctulatis; clypeo antice fortiter triangulariter emarginato; antennis 9-articulatis; unguiculis bifidis. [Long. $3\frac{1}{5}$, lat. $1\frac{1}{5}$ lines.

The head and prothorax are less shining than the elytra, and their puncturation is very fine, faint and sparing, scarcely visible under a strong lens; the reflexed margin of the clypeus is very wide at the sides but fine in the middle, the surface of the reflexed margin evidently punctulate; the labrum (viewed from above) is strongly concave in front; the surface of the clypeus is quite continuous with that of the rest of the head, and the clypeal suture is entirely obsolete. The prothorax is a little more than half again as wide as long, and its base a little more than a third again as wide as its front, which is gently bisinuate with strongly produced angles; the sides are gently arched, the hind angles (viewed from above) well-defined and slightly directed hindward; the base is widely and gently lobed in the middle. The pygidium has a keel down the middle which does not reach the apex. The elytra are scarcely visibly wrinkled transversely, but bear some obscure stria-like longitudinal wrinkles; they are truncate at the apex and the lateral fringe is not continued round the apex

which is devoid of a distinct membranous border ; they are finely but strongly, and not closely punctured ; they have scarcely any pubescence, but the specimen before me may possibly be abraded. The metasternum and hind coxæ are rather sparingly (especially in the middle) and strongly punctured,—the ventral segments much more closely. The ventral series are fairly defined, consisting of fine long hairs. The hind coxæ are much shorter than the metasternum, and evidently longer on the external margin than the second ventral segment. The hind femora are not much wider, but very much longer than the intermediate with the inner apical angle very feeble. The tibiæ are long and slender.

Evidently allied to *H. gracilipes*, but at once distinguishable, *inter alia*, by the triangularly emarginate clypeus, differently shaped labrum, and almost impunctate head and prothorax.

Near Adelaide.

H. SIMULATOR, sp.nov.

Sat elongatus ; postice vix dilatatus ; sat nitidus ; pube cinerea minus dense vestitus ; niger, plus minus picescens ; antennis testaceis, palpis pedibusque rufescentibus ; crebre fortius (elytris minus fortiter) punctulatus ; clypeo antice fortiter triangulariter emarginato ; antennis 9-articulatis ; unguiculis bifidis.

[Long. 3-4 $\frac{1}{5}$, lat. 1 $\frac{3}{5}$ -2 lines.

The structure of the head, clypeus and labrum scarcely differs from that in *H. leviceps*, except that the clypeal suture is marked by a fine elevated line, which is angulated in the middle ; the entire head, however, is closely and rather strongly punctulate. The prothorax, also, scarcely differs from that of the same species except in being slightly more transverse and closely and rather strongly (not quite so strongly as the head) punctured. The elytra are very closely and rather finely punctured with much very fine transverse wrinkling ; they are decidedly narrow and elongate, their apices somewhat truncate ; they have no striæ except (in some examples) some indication of a sutural stria ; the lateral fringe is not continued in any conspicuous manner round the apex which has no distinct membranous border. The pygidium

is closely and rather finely punctuate and is clothed with long erect hairs. The metasternum and hind coxæ are punctured closely and moderately strongly at the sides, much less closely in the middle,—the ventral segments rather evenly and closely, but the punctures are feeble at the sides and stronger in the middle. The ventral series consist of fine hairs and are rather conspicuous. The hind coxæ are much shorter than the metasternum and not much longer on the external margin than the second ventral segment. The hind femora are evidently wider and very much longer than the intermediate, with the inner apical angle very feeble. The tibiæ are long and slender.

This species is allied to *H. gracilipes* and *leviceps*.

Adelaide district ; not rare.

H. PYGIDIALIS, sp.nov.

Sat elongatus ; postice vix dilatatus ; sat nitidus (capite prothoraceque subopacis) ; ferrugineus ; supra pilis validis erectis sat elongatis (capite prothoraceque crebrius, elytris minus crebre) vestitus ; capite crebre rugulose, prothorace et elytris sparsim sat crasse nec rugulose, punctulatis ; pygidio sparsim granulato ; clypeo antice profunde triangulariter exciso ; antennis 9-articulatis ; unguiculis appendiculatis. [Long. $3\frac{1}{2}$, lat. $1\frac{2}{3}$ lines.

The anterior emargination of the clypeus (of which the reflexed border is finely continuous) is so deep as to indent it half way to the base ; its surface does not quite form an even continuous plane with that of the rest of the head ; the impressed clypeal suture is fairly distinct, and is angulated in the middle. The prothorax is nearly twice as wide as long, and is moderately narrowed in front with sharp and moderately produced front angles ; the sides diverge sinuately from the front to behind the middle, where they are strongly rounded, and then converge in a continuous curve to the base, with which they do not form a distinct angle ; the hind outline of the segment is strongly convex all across, but there is no distinct lobe ; the sculpture of its

surface consists of large punctures which are neither deep nor close, from each of which a strong erect hair springs. The elytra have scarcely any indication of striæ; their sculpture consists of large and small punctures (the large ones smaller than those of the prothorax, and bearing hairs which are finer than those of the prothorax) rather confusedly mingled; the lateral fringe is continuous round the apex, which has a very wide membranous border. The metasternum and hind coxæ (especially the latter) are faintly punctured—particularly in the middle—and are very nitid; the ventral segments are sub-opaque and lightly punctured—moderately at the sides, sparingly in the middle. The ventral series consist of long hairs, and are much confused with other hairs. The hind femora are not much wider than the intermediate, their inner apical portion well defined and knife-edge-like, but not sharply angled. The hind coxæ are much shorter than the metasternum, but considerably longer on the external margin than the second ventral segment. The pygidium presents the unusual character of being somewhat strongly inclined under the body (instead of vertical or nearly so, as in most species of the genus).

Near Adelaide.

H. RUBESCENS, Blanch.

H. rubescens, Blanch., Cat. Coll. Ent., 1850, p. 111.

I have before me specimens from Kangaroo Island of an insect which I have no doubt is this species. As the original description is very brief I here supply a fuller one.

Moderately elongate, and but little dilated behind. Of a shining piceous colour tending to reddish,—especially on the prothorax,—the antennæ and palpi testaceous red, the legs pitchy red. The labrum is turned upward as in the species of Sect. III., but does not quite reach the level of the surface of the clypeus. The clypeus is widely and gently emarginate (chiefly in an upward direction, *i.e.*, through the transverse convexity of its front) and its reflexed margin is continuous; it forms a nearly even plane

with the rest of the head, the clypeal suture being very fine and angulated; its surface is closely and rather finely rugose. The remainder of the head (which with the clypeus is clothed more closely than the prothorax and elytra with semi-erect brown hairs) is punctured sparingly and rather faintly, uniformly with the prothorax. The prothorax is a little more than half again as wide as its length down the middle, and the base is about half again as wide as the front, which is rather strongly emarginate with acutely produced angles; the sides are only lightly rounded (their greatest divergence being a little behind the middle) and, viewed from above, seem to form almost right angles with the base which is moderately lobed in the middle; its surface is clothed uniformly with the elytra, and much more sparingly than the head, with moderately long semi-erect light brown hairs. The elytra are non-striate, and are transversely wrinkled and punctured a little more closely and a little more strongly than the prothorax: their lateral fringe is not continued in any conspicuous way round the apex, which, however, has a distinct membranous border. The pygidium is not keeled and is finely and moderately closely punctured. The metasternum, hind coxæ, and ventral segments are punctured rather finely and closely (a little more sparingly and strongly in the middle,—especially the hind coxæ); the hind coxæ are much shorter than the metasternum, and a little longer on the external margin than the second ventral segment; the ventral series consist of fine hairs, and are much confused with other hairs. The hind femora do not differ much from the intermediate; their inner apical angle rather well defined; the puncturation of their undersurface rather confused on the external half. Claws bifid.

[Long. $4\frac{3}{5}$, lat. $2\frac{1}{5}$ lines.

N.B.—A specimen taken by my friend, Mr. J. Anderson, at Port Lincoln, is larger (long. $5\frac{1}{2}$ lines) with the clypeal margin scarcely distinct in the middle, and the reddish tone scarcely noticeable even on the prothorax, but I think it can hardly be treated as distinct.

3RD SECTION.—UPPER EDGE OF LABRUM RISING AT LEAST TO A
LEVEL WITH THE PLANE OF THE CLYPEUS.

Sub-section 1. Antennæ 8-jointed.

Sub-sub-section 1. Claws bifid.

A. Species less than $3\frac{1}{2}$ lines in length.

B. Elytra unicolorous.

C. Pilosity light ferruginous in colour *submetallicus*, Blackb.

CC. Pilosity white (or nearly so)..... *Lindi*, Blackb.

BB. Elytra with an apical red spot..... *maculatus*, Blackb.

AA. Species over $4\frac{1}{2}$ lines in length..... *capillatus*, Macl.

H. CAPILLATUS, Macl.

H. capillatus, Macl., P.L.S.N.S.W. (2) III, p. 916.

Of this species (described on specimens from King's Sound in N.W. Australia) I find an example among the *Coleoptera* collected by Mr. J. P. Tepper in the N. Territory of S. Australia. Mr. Macleay speaks of the elytra as having three faint striæ on either side of the suture; the N. Territory specimen before me has no striæ at all, and that from King's Sound has only faint traces of *one*. The original type is no doubt more distinctly striated than either of these, but, as far as my observations go, the striation of the elytra in *Heteronyx* (at least with a very few exceptions) is quite a valueless character, as true striation hardly exists in the genus and such apparent simulation of it as is occasionally traceable is a mere individual peculiarity, and is never, I think, connected with anything like a linear arrangement of puncturation. I never treat it in my descriptions as a character of any importance.

The following characters are not noticed in Mr. Macleay's description of the species, and I am indebted to him (as in the case of some other species) for sending me an example with a view to my supplementing his diagnosis. Upper margin of labrum rising exactly to a level with the surface of the clypeus; antennæ 8-jointed; teeth of front tibiæ strong and acute; hind coxæ not much shorter than metasternum and about twice as long on external margin as second segment of hind body; ventral series consisting of

hairs and moderately conspicuous; hind femora not much wider than intermediate, confusedly punctured all over their under-surface, and with the inner apical angle prominent but rounded off; claws strongly bifid.

H. SUBMETALLICUS, sp.nov.

Sat brevis; postice leviter dilatatus; minus nitidus; setis longis erectis ferrugineis minus crebre vestitus; vix perspicue punctulatus; labro clypeum leviter superante; antennis 8-articulatis; unguiculis bifidis. [Long. $2\frac{3}{5}$, lat. $1\frac{2}{5}$ lines.

The upper edge of the turned up labrum is wide, slightly angulated in the middle and rises above the surface of the clypeus; the latter is scarcely concave in front and has no reflexed margin in the part overtopped by the labrum; it is distinctly separated from the rest of the head by a well-defined impressed slightly arched suture; the whole surface of the head is rugulose rather than distinctly punctured. The prothorax is scarcely half again as wide as long, its base bearing a similar proportion to its front margin which is gently concave with angles sharp but little produced; its sides are rather strongly rounded, the hind angles (viewed from above) being scarcely defined; the base is moderately bisinuate with a fairly defined lobe; the surface is obscurely and faintly uneven but without defined puncturation. The surface of the elytra bears a faint sculpture similar to that of the prothorax, and in addition a row of fine granules close to the suture on either side, outside which is an obscure indication of a stria (noticeable only in certain lights); the lateral fringe is hardly distinct from the erect pilosity of the surface and is not conspicuous round the apex, which has a distinct membranous border. The sculpture of the underside is quite obsolete. The hind coxæ are scarcely shorter than the metasternum and are (on the external margin) quite twice as long as the second ventral segment. The ventral series consist of very long fine hairs. The hind femora are very broad, their inner apical angle defined but not in the least produced, their surface bearing the usual coarse serial

punctures. The legs are more shining than the other parts of the insect, and are stout, with distinct puncturation. The lower two teeth of the anterior tibiæ are fairly sharp and strong, the uppermost tooth is small and blunt.

This species belongs to a small and isolated group of *Heteronyx* (grouping the species by their facies), of which the next two may be regarded as members. They bear much general resemblance to *Haploopsis*, which however has simple claws.

A single specimen occurred to me near Port Lincoln.

H. MACULATUS, sp.nov.

Sat brevis; postice leviter dilatatus; sat nitidus; setis longis erectis pallidis minus crebre vestitus; niger, antennis pedibus et elytrorum apice rufescentibus capite sparsim minus crasse, prothorace elytris que crassissime nec profunde (illo sparsim his minus sparsim), punctulatis; labro clypeum sat fortiter superante; antennis 8-articulatis; unguiculis bifidis.

[Long. 2 (vix), lat. 1 line.

The head and clypeus scarcely differ from those of the preceding species in any respect except in being nitid, with more distinct puncturation, and the labrum more strongly rising above the surface of the clypeus. The prothorax is nearly twice as wide as long, its base more than half again as wide as its front margin, which is very lightly convex with well defined but not produced angles, the sides arcuately narrowed from base to front, the hind angles (viewed from above) fairly well defined, the base very lightly bisinuate and widely and gently lobed in the middle. The extremely coarse rugosity (scarcely to be called defined puncturation) of the elytra has a slight linear tendency which gives in some lights a slight simulation of striation, and there is a good deal of transverse wrinkling; the lateral fringes are not distinct from the general pilosity. The underside and legs scarcely differ from those of *H. submetallicus*, except in being very nitid with the sterna, coxæ, and ventral segments distinctly punctulate—very sparingly in the middle, but more closely at the

sides. On the anterior tibiæ the uppermost of the external teeth is small, but well defined and sharp.

Very distinct by the red apex of the elytra, forming a defined round spot on either side.

A single specimen occurred to me on Yorke's Peninsula.

H. LINDI, sp.nov.

Sat brevis ; postice vix dilatatus ; minus nitidus ; setis longis erectis pallidis minus crebre vestitus ; niger, antennis pedibusque picescentibus ; capite sparsim subtilius (clypeo nonnihil crassius crebrius), prothorace sparsim subtiliter, elytris vix perspicue, punctulatis ; pygidio sparsim granulato ; labro clypeum vix superante ; antennis 8-articulatis ; unguiculis bifidis.

[Long. 2, lat. 1 line.

. Closely allied to *H. maculatus*, and scarcely differing from it on the upper surface except as indicated in the Latin diagnosis, in the absence of the apical red spot, in the slightly less transversity of the prothorax, and in the presence of some faint scratchy striæ (especially one near the suture) on the elytra, the surface of which, though not nitid, would be very smooth were it not for some obscure roughnesses which form the bases of the long hairs. The underside scarcely differs from that of *H. submetallicus* except in being a little more shining, with puncturation (though sparingly and lightly impressed) distinct ; whereas in *submetallicus* it is so faint as to be hardly indicated when viewed under a very strong lens. I have felt some little hesitation in regarding this species as distinct from *submetallicus*, but have concluded that the above-named difference, together with the much smaller size of *H. Lindi*, its having no tendency to metallic colouring, its pilosity being nearly white (instead of ferruginous), and the hind angles of its prothorax appearing, when viewed from above, evidently more defined, can hardly be regarded as indicating a mere variety.

Port Lincoln.